

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

ATTY.'S DOCKET: 98 P7501 US 01

In re the application of:
Scheller et al.

Serial No.: 09/204,706

Filing Date: December 3, 1998

Title: REMOVAL OF POST-RIE POLYMER)
ON Al/Cu METAL LINE)

Group Art: 1746

Examiner: A. Olsen



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BB
228-01

PRELIMINARY AMENDMENT

Honorable Commissioner of Patents and Trademarks
Washington, D.C. 20231

Sir:

In advance of prosecution and before the divisional application is taken up for examination on the merits, please cancel claims 1-12. Please add claims 13-17 as follows:

13. In a metal etch tool for removing post-RIE polymer rails formed on a Al/Cu metal line of a semiconductor structure, the improvement comprising: an integrated metal etch tool comprising a separate chamber for forming a water-only plasma process to strip the photo-resist layer of a semiconductor or micro-electronic composite structure previously subjected to a RIE process; and supplying a mixture of an etching gas and an acid neutralizing gas into a vacuum chamber on which said structure is supported to form a water soluble material of sidewall polymer rails left behind on the Al/Cu metal line from the RIE

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process, to permit removing the water soluble material with deionized water.

14. The integrated metal etch tool of claim 13 wherein the water-only plasma process is conducted at temperatures between about 175-200°C to limit the thickness of the sidewall polymer.

15. The integrated metal etch tool of claim 13 wherein the water-only plasma process is conducted at temperatures greater than 200°C to form a passivation layer on the Al/Cu metal line surface prior to forming a water soluble material of sidewall polymer rails and removing the water soluble material with deionized water.

16. In a metal etch tool for removing post-RIE polymer rails formed on a Al/Cu metal line of a semiconductor structure, the improvement comprising: an integrated metal etch tool comprising a separate chamber for supplying a mixture of an etching gas and an acid neutralizing gas into a vacuum chamber in which said composite structure is supported to form a water soluble material of sidewall polymer rails left behind on the Al/Cu metal line from the RIE process; to permit removing photo-resist from said structure by a chemical down stream etching method.

17. The integrated metal etch tool of claim 16 wherein the chemical down stream etching is conducted at temperatures